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Study on immune function monitoring during altitude training for adolescent athletes

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Objective Monitoring the changes of the body's immune function during altitude training is of great significance for understanding the athlete's physical function and judging the degree of fatigue. In this paper, the immune function of adolescent athletes in sports training in different altitudes was monitored, and the effects of different altitude training on immunoglobulins and T lymphocytes and their subgroups in adolescent athletes were discussed.

Methods

Male adolescent middle and long distance runners were divided into two groups according to training performance, 2500m group (10 people, age: 14.8 ± 1.4 years old, height: 163.6 ± 7.3 cm, weight: 49.5 ± 6.0 kg, training period: 1.2 ± 0.6 years) and 1800m group (10 people, age: 15.7 ± 1.7 years old, height: 164.7 ± 8.8 cm, weight: 49.2 ± 6.1 kg, training period: 1.3 ± 0.8 years) volunteered to participate in the 2-stage training (3 weeks plateau and 3 weeks plain). The change of CD3+CD4, CD3+CD8+CD4+/CD8+, IgA, IgG, IgM were tested every week.

Results

The result showed that: (1)The 2500m group had shown statistical differences of CD3+CD4+CD8+ at different times, and CD4+/CD8+ had no changes. The 1800m group had not shown statistical differences of CD3+CD4+CD4+/CD8+ at different times. Compared with the base value, the CD3+CD8+ was significantly increased ($P < 0.01$). There was no statistical differences of CD3+CD4+CD3+CD8+CD4+/CD8+ at different times between two groups. (2)The 2500m group had not shown significant changes of IgA. Three weeks altitude training following with three week plain training the IgM and IgG showed a downward trend; and compared with altitude period, the IgM and IgG was lower in plain ($P < 0.05$). The 1800m group had not shown statistical differences of IgA, IgM, IgG at different times. There was no statistical differences of IgA, IgM, IgG at different times between two groups.

Conclusions The immunity function of adolescent athletes is more affected during high altitude training, suggesting that the adolescent athletes in the pursuit of high altitude training should pay attention to the monitoring and regulation of immunity function. CD3+CD8+ is more sensitive to hypoxia which can be used as a sensitive indicator and has significant meaning in monitoring altitude training.